# Tuna Newsletter



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# U.S. TUNA STATISTICS

*Editor's note: The following articles were prepared by NMFS personnel from data and information gathered from sources in the U.S. tuna industry. (A. Jackson)*

## U.S. CANNED TUNA INDUSTRY HIGHLIGHTS, SECOND QUARTER 1990

**Total receipts of raw tuna by U.S. canners during the second quarter of 1990 (April-June) decreased by 19%** to 125,400 short tons (st) from the second quarter 1989 (Table 1). Receipts in Puerto Rico and in California and American Samoa were down by 28% and 5%, respectively. Yellowfin tuna was the principal component of domestically caught deliveries at 31,300 st, followed by skipjack (23,100 st) and albacore (1,800 st). The gap between imports and domestic deliveries narrowed, with imports accounting for 55% of the total,

**Table 1.** U.S. cannery receipts (st) of domestic and imported tuna by species for the second quarters of 1989, 1990 and the recent (1985-89) second quarter averages.

| SPECIES— | | Albacore | Skipjack | Yellowfin[1] | TOTAL |
|---|---|---|---|---|---|
| **AMERICAN SAMOA & CALIFORNIA** | | | | | |
| 1989 | DOMESTIC | 600 | 24,600 | 10,700 | 35,900 |
| | IMPORTED | 4,000 | 19,700 | 2,200 | 25,900 |
| | TOTAL | 4,600 | 44,300 | 12,900 | 61,800 |
| 1990 | DOMESTIC | 1,800 | 20,500 | 16,300 | 38,600 |
| | IMPORTED | 6,500 | 9,300 | 4,400 | 20,200 |
| | TOTAL | 8,300 | 29,800 | 20,700 | 58,800 |
| 1985-89 Average | DOMESTIC | 500 | 22,000 | 13,700 | 36,200 |
| | IMPORTED | 4,100 | 8,400 | 3,100 | 15,600 |
| | TOTAL | 4,600 | 30,400 | 16,800 | 51,800 |
| **PUERTO RICO** | | | | | |
| 1989 | DOMESTIC | 500 | 9,200 | 14,700 | 24,400 |
| | IMPORTED | 25,300 | 27,000 | 15,700 | 68,000 |
| | TOTAL | 25,800 | 36,200 | 30,400 | 92,400 |
| 1990 | DOMESTIC | 0 | 2,700 | 15,000 | 17,700 |
| | IMPORTED | 18,800 | 17,800 | 12,400 | 49,000 |
| | TOTAL | 18,800 | 20,500 | 27,400 | 66,700 |
| 1985-89 Average | DOMESTIC | 200 | 7,000 | 21,100 | 28,300 |
| | IMPORTED | 22,300 | 16,300 | 14,800 | 53,400 |
| | TOTAL | 22,500 | 23,300 | 35,900 | 81,700 |
| **TOTAL** | | | | | |
| 1989 | DOMESTIC | 1,200 | 33,700 | 25,400 | 60,300 |
| | IMPORTED | 29,400 | 46,800 | 17,900 | 94,100 |
| | TOTAL | 30,600 | 80,500 | 43,300 | 154,400 |
| 1990 | DOMESTIC | 1,800 | 23,100 | 31,300 | 56,200 |
| | IMPORTED | 25,300 | 27,100 | 16,800 | 69,200 |
| | TOTAL | 27,100 | 50,200 | 48,100 | 125,400 |
| 1985-89 Average | DOMESTIC | 700 | 29,000 | 34,800 | 64,500 |
| | IMPORTED | 26,400 | 24,800 | 17,900 | 69,100 |
| | TOTAL | 27,100 | 53,800 | 52,700 | 133,600 |

[1]Includes small amounts of bigeye, blackfin and bluefin tuna.

**Table 2.** U.S. cannery imports (st) of tuna by species[1] and flag of catcher vessel for the second quarter of 1990. Totals for the second quarter of 1989 are given for comparison.

| COUNTRY | 1990 | | | | 1989 |
|---|---|---|---|---|---|
| | ALB | SKJ | YFT[2] | TOTAL | TOTAL |
| CAYMAN ISLANDS | 500 | 0 | 0 | 500 | 0 |
| ECUADOR | 0 | 4,000 | 1,200 | 5,200 | 3,200 |
| FRANCE | 0 | 1,700 | 600 | 2,300 | 13,300 |
| GHANA | 0 | 4,000 | 1,600 | 5,600 | 6,900 |
| JAPAN | 3,600 | 3,000 | 1,100 | 7,700 | 3,800 |
| MALDIVE ISLANDS | 0 | 200 | 0 | 200 | 0 |
| MEXICO | 0 | * | 400 | 400 | 1,900 |
| NEW ZEALAND | 700 | 0 | 0 | 700 | 1,100 |
| PANAMA | 1,400 | 100 | 1,200 | 2,700 | 2,200 |
| PORTUGAL | 600 | 0 | 0 | 600 | 500 |
| SOUTH KOREA | 1,000 | 3,100 | 3,200 | 7,300 | 16,400 |
| SPAIN | 0 | 3,000 | 2,100 | 5,100 | 4,800 |
| TAIWAN | 14,900 | 800 | 700 | 16,400 | 26,300 |
| VANUATU | 0 | 1,800 | 1,300 | 3,100 | 7,100 |
| VENEZUELA | 0 | 1,900 | 3,300 | 5,200 | 3,700 |
| OTHER | 2,600 | 3,500 | 100 | 6,200 | 2,900 |
| TOTAL | 25,300 | 27,100 | 16,800 | 69,200 | 94,100 |

*Less than 100 st reported for this category.

[1]ALB=albacore; SKJ=skipjack; YFT=yellowfin.

[2]Includes small amounts of bigeye and blackfin tuna.

**Table 3.** Receipts (st) of tuna by U.S. canneries by species[1] and area of capture in the second quarters of 1989 and 1990.

| SOURCE | 1989 | | | 1990 | | |
|---|---|---|---|---|---|---|
| | ALB | SKJ | YFT[2] | ALB | SKJ | YFT[2] |
| **E. ATLANTIC OCEAN** | | | | | | |
| DOMESTIC | 0 | 0 | 0 | 0 | 0 | 0 |
| IMPORTED | 14,100 | 6,200 | 1,500 | 9,600 | 5,200 | 2,500 |
| TOTAL | 14,100 | 6,200 | 1,500 | 9,600 | 5,200 | 2,500 |
| **W. ATLANTIC OCEAN** | | | | | | |
| DOMESTIC | 0 | 0 | 0 | 0 | 0 | 0 |
| IMPORTED | 6,200 | 1,200 | 300 | 6,300 | 1,100 | 100 |
| TOTAL | 6,200 | 1,200 | 300 | 6,300 | 1,100 | 100 |
| **E. PACIFIC OCEAN** | | | | | | |
| DOMESTIC | * | 11,300 | 21,600 | 0 | 3,400 | 18,300 |
| IMPORTED | 0 | 7,200 | 8,100 | 0 | 6,300 | 6,900 |
| TOTAL | * | 18,500 | 29,700 | 0 | 9,700 | 25,200 |
| **W. PACIFIC OCEAN** | | | | | | |
| DOMESTIC | 1,200 | 22,400 | 3,800 | 1,800 | 19,800 | 13,000 |
| IMPORTED | 6,700 | 19,700 | 2,200 | 8,500 | 8,900 | 4,400 |
| TOTAL | 7,900 | 42,100 | 6,000 | 10,300 | 28,700 | 17,400 |
| **INDIAN OCEAN** | | | | | | |
| DOMESTIC | 0 | 0 | 0 | 0 | 0 | 0 |
| IMPORTED | 2,300 | 12,400 | 5,700 | 900 | 5,600 | 2,900 |
| TOTAL | 2,300 | 12,400 | 5,700 | 900 | 5,600 | 2,900 |

*Less than 100 st reported for this category.

[1]ALB=albacore; SKJ=skipjack; YFT=yellowfin.

[2]Includes small amounts of bigeye and blackfin tuna.

down from 61% of the second quarter 1989 total. Skipjack was the leading import at 27,100 st, followed by albacore (25,300 st) and yellowfin (16,800 st). The leading non-U.S. supplier was Taiwan, with 24% of the import market, followed by Japan and South Korea with 11% each (Table 2). The western Pacific Ocean was the main source of albacore (10,300 st) and skipjack (28,700 st) in U.S. cannery receipts, while the eastern Pacific contributed the greatest quantity of yellowfin (25,200 st) (Table 3).

**Contract prices for domestically caught tuna delivered to U.S. canners** in American Samoa and Puerto Rico for the second quarter of 1990 differed only slightly from second quarter 1989 prices (Table 4).

**U.S. imports of canned tuna packed in water totaled 19,400 st for the second quarter of 1990,** down 24% from the second quarter 1989 total. Wholesale list prices for canned tuna during this period were virtually unchanged (Table 5).

*Doug Prescott and John Childers, SWFSC, contributed to this article.*

## U.S. CANNED TUNA INDUSTRY UPDATE

**Total receipts of tuna by U.S. canners for the first half of 1990 (January-June) decreased by 19%** to 226,200 st, compared to the total for the same period in 1989 (Table 6). Deliveries of skipjack were down 34%, while deliveries of albacore and yellowfin were relatively stable.

**1990 U.S. imports of canned tuna packed in water totaled 104,200 st as of September 30,** down 18% from the total for the same period in 1989.

**Wholesale list prices for canned tuna as of October 5** were virtually unchanged from second quarter 1990 prices for white meat, while prices for light meat were at their lowest levels in three years. The prices for white meat, advertised and private labels, were $64.50-67.15 and $52.00-54.00, respectively; light meat prices were $40.00-43.50 and $25.00-26.50, respectively.

**Table 4.** Contract prices (U.S. $ per st) for skipjack and yellowfin tuna for delivery to U.S. canneries in American Samoa and Puerto Rico by U.S. vessels departing on trips in second quarter 1989 and 1990.

| SIZE CLASS (lbs.) | SKIPJACK | | YELLOWFIN | |
|---|---|---|---|---|
| | 1989 | 1990 | 1989 | 1990 |
| **American Samoa** | | | | |
| <3 | 250-335 | 280-350 | 250-335 | 280-350 |
| 3 to 4 | 460-595 | 475-570 | 460-595 | 475-570 |
| 4 to 7.5 | 670-790 | 680-775 | 670-790 | 680-775 |
| 7.5 to 20 | 750-870 | 765-860 | 775-895 | 785-885 |
| >20 | - | - | 975-1,065 | 885-1,075 |
| **Puerto Rico** | | | | |
| <3 | 250-335 | 300-350 | 250-335 | 300-350 |
| 3 to 4 | 470-605 | 520-570 | 470-605 | 520-570 |
| 4 to 7.5 | 675-800 | 725-775 | 675-800 | 725-775 |
| 7.5 to 20 | 760-885 | 810-860 | 785-910 | 835-885 |
| >20 | - | - | 975-1,065 | 935-1,075 |

**Table 5.** Wholesale list price (U.S. $ per case) for canned tuna packed in oil or water, by brand type, in the second quarter of 1989 and 1990.

| CASE PACK | YEAR | ADVERTISED LABEL | PRIVATE LABEL |
|---|---|---|---|
| White meat, solid 12.5-oz (24) | 1989 | 64.50-67.00 | 50.00-52.00 |
| | 1990 | 64.50-67.15 | 50.00-54.00 |
| Light meat, chunk 6.5-oz (48) | 1989 | 42.45-45.00 | 24.00-28.00 |
| | 1990 | 42.45-45.00 | 25.00-27.00 |

**Table 6.** U.S. cannery receipts (st) of domestic and imported tuna by species for the first two quarters of 1989, 1990 and the recent (1985-89) averages.

| SPECIES— | | Albacore | Skipjack | Yellowfin[1] | TOTAL |
|---|---|---|---|---|---|
| 1989 | DOMESTIC | 3,100 | 60,200 | 46,500 | 109,800 |
| | IMPORTED | 55,700 | 74,200 | 39,000 | 168,900 |
| | TOTAL | 58,800 | 134,400 | 85,500 | 278,700 |
| 1990 | DOMESTIC | 4,500 | 43,400 | 54,500 | 102,400 |
| | IMPORTED | 50,200 | 45,100 | 28,500 | 123,800 |
| | TOTAL | 54,700 | 88,500 | 83,000 | 226,200 |
| 1985-89 Average | DOMESTIC | 1,400 | 50,400 | 63,500 | 115,300 |
| | IMPORTED | 49,600 | 51,000 | 35,200 | 135,800 |
| | TOTAL | 51,000 | 101,400 | 98,700 | 251,100 |

[1]Includes small amounts of bigeye, blackfin and bluefin tuna.

## U.S. TUNA FISHERIES UPDATE

### EASTERN PACIFIC PURSE SEINE FISHERY

During the period January through September, 1990, 30 U.S. purse seiners caught an estimated 46,100 metric tons (mt) of yellowfin tuna and 7,800 mt of skipjack tuna in the eastern tropical Pacific (Figure 1). The yellowfin catch was down 20% from the 1989 catch (57,500 mt) for the same period, and the skipjack catch was down 55% from the 1989 catch (17,500 mt). The lower catches in 1990 are largely the result of a decrease in the size of the U.S. fleet, a consequence of the decision by U.S. canners to buy only "dolphin safe" tuna. By the end of September, the number of active U.S. purse seiners in the eastern Pacific had been reduced from 30 to 10.

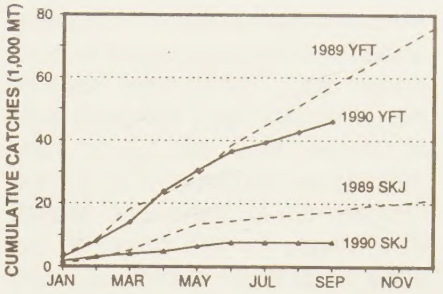


**Figure 1.** Cumulative tuna catches, by month, for the U.S. eastern Pacific purse seine fishery, 1989 and 1990.

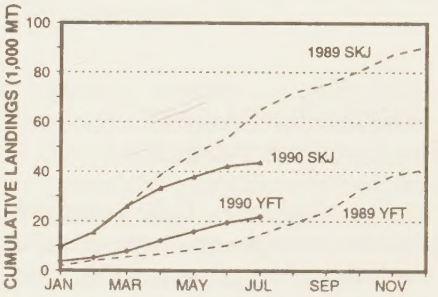


**Figure 2.** Cumulative tuna landings, by month, for the U.S. western Pacific purse seine fishery, 1989 and 1990.

### WESTERN PACIFIC PURSE SEINE FISHERY

During the period January through July, 1990, 35 U.S. purse seiners landed an estimated 43,700 mt of skipjack tuna and 21,700 mt of yellowfin tuna in the western Pacific under the South Pacific Regional Treaty (Figure 2). The skipjack catch was down 33% from the 1989 catch (65,100 mt) for the same period, and the yellowfin catch was up 46% from the 1989 catch (14,900 mt). The large increase in the yellowfin catch is due to the fact that the fleet was fishing farther east where yellowfin are more abundant.

### NORTHERN PACIFIC ALBACORE FISHERY

The 1990 U.S. albacore fishery in the northern Pacific started in mid-July. As of September 20, the estimated catch stood at 1,600 mt. Five vessels carried NMFS observers on a total of six trips and reported catch rates ranging from

11- to 110-fish per day. The majority of the fish have been caught in three areas: about 1,000 miles north of Hawaii (in mid-July), 400 miles west of Oregon (from late July to early August) and, in September, off the northern tip of Vancouver Island. Size ranges for fish caught in the three major areas described above were 6.5 to 10.0 kg, 5.5 to 6.5 kg and 4.5 to 13.5 kg, respectively. Most other areas reported smaller fish (2.7 to 3.6 kg).

### SOUTHERN PACIFIC ALBACORE FISHERY

The 1989-90 U.S. albacore fishery in the southern Pacific started in November, 1989, and lasted through April, 1990. Forty-nine vessels participated in the fishery and landed approximately 4,000 mt, a slight increase over catches in the 1988-89 fishery of 3,800 mt. The fishery was conducted principally in a narrow area east of New Zealand and south of French Polynesia, a zone referred to as the Subtropical Convergence Zone (STCZ). Early in the season, some boats fished for the first time in the Tasman Sea and off the northeastern end of New Zealand.

Catch rates increased 20% from 223-fish per day in the 1988-89 fishery to 267-fish per day in the 1989-90 fishery. Average sizes of fish landed was 6.5 kg.

### GULF OF MEXICO YELLOWFIN FISHERY

In 1989, 215 U.S. longliners landed 5,600 mt of yellowfin tuna in the Gulf of Mexico (Figure 3). Yellowfin landings for 1989 were down 28% from 1988, when 217 longliners landed 7,800 mt. (Data provided by Guy Davenport, NMFS Southeast Fisheries Science Center)

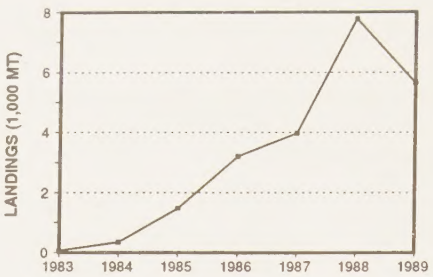


**Figure 3.** Annual yellowfin tuna landings by U.S. longliners in the Gulf of Mexico, 1983 to 1989.

### ATLANTIC BLUEFIN FISHERY

The U.S. Atlantic bluefin tuna fishery is regulated with an ICCAT annual catch quota of 1,387 mt. As of September 28, the total commercial landings for 1990 stood at 877 mt, down 18% from the 1989 landings (1,065 mt) for the same period. The total includes landings in the following categories: general (382 mt), purse seine (256 mt), commercial angling (64 mt), harpoon (39 mt) and incidental (136 mt). Not yet available are landings for the recreational angling category, which normally become available at the end of the season. (Data provided by Ann Favazza, NMFS Northeast Region)

*Al Coan and Gary Rensink, SWFSC, contributed to this article.*

# REPORTS

*Editor's note: Original reports are published as a service to subscribers and may not represent the views of the NMFS. Readers should contact the authors of reports for details, if needed.*

*Similarities between the eastern Pacific and eastern Atlantic tropical tuna fisheries are more than geographical, as events during the 1980s, described in the following two articles, show. (D. Au)*

## THE ATLANTIC YELLOWFIN YEAR PROGRAM

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Indications that the yellowfin tuna stock of the Atlantic Ocean was on the verge of collapse in the mid-1980s proved to be misleading, according to the findings of the Yellowfin Year Program (YYP), a research program of the International Commission for the Conservation of Atlantic Tunas (ICCAT). In fact, the YYP found that the yellowfin stock was actually in a state of recovery, benefitting from a protective environmental anomaly that made the fish less vulnerable to capture, and from a reduction in fishing effort. These and other findings, to be contained in an ICCAT publication scheduled for release in 1991, are summarized below:

During the November 1985 meeting of the ICCAT's Standing Committee on Research and Statistics, scientists described what appeared to be a very critical situation in the Atlantic yellowfin tuna fishery. The catch per unit of fishing effort (CPUE) of large fish was declining, and, significantly, the typical seasonal peaks in the catches had disappeared (Figure 4). Also, a substantial portion of the French and Spanish purse seine fleet had moved to the Indian Ocean in search of more productive fishing grounds (Figure 5). The large (greater than 30 kg), sexually mature yellowfin constitute the most important category of tuna in the eastern Atlantic fishery. Their low CPUEs strongly suggested that the stock was collapsing, not a very surprising possibility since the stock had been exploited until 1983 at a high level of fishing effort, with catches exceeding the calculated maximum sustainable yield.

To address this situation, and to determine the true condition of the

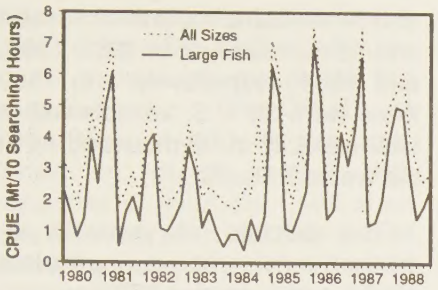


**Figure 4.** Average standardized catch rates for French, Ivory Coast and Spanish purse seiners, by 2-month periods, for large (greater than 30 kg) and for all sizes of yellowfin tuna in the Atlantic Ocean.

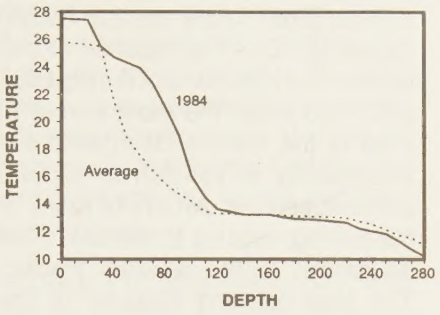


**Figure 6.** The normal thermocline and the observed 1984 thermocline during February in the equatorial Atlantic Ocean at 4° west longitude.

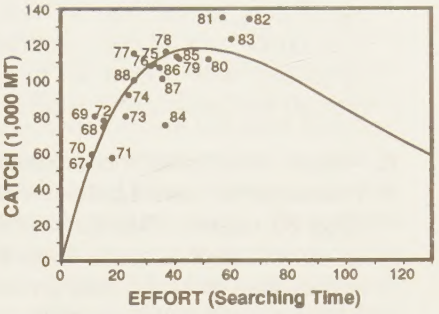


**Figure 7.** Observed catch and effort relationship and estimated equilibrium yield curve calculated for eastern Atlantic yellowfin tuna.

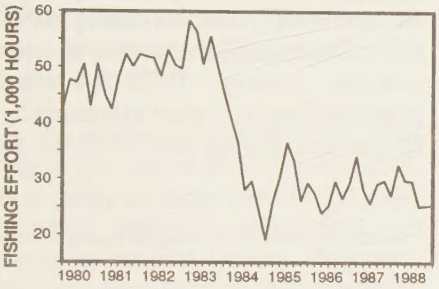


**Figure 5.** Fishing effort (fishing hours) of French, Ivory Coast and Spanish purse seiners, by 2-month periods, in the Atlantic Ocean.

Atlantic yellowfin tuna stock, and to monitor the population changes expected from the reduction of fishing effort, the YYP was established by the ICCAT and given a 3-year budget of $175,000. Scientific research for the YYP was coordinated by Dr. Alain Fonteneau of France. Other participants to the program included scientists from Cape Verde, France, the Ivory Coast, Senegal, Spain, U.S.A., and Venezuela. Research activities of the YYP covered the entire tropical Atlantic Ocean and involved intensive sampling of all fleets for catch and effort data, the collection of biological data, the placing of scientific observers aboard vessels, tagging, and analyses of economic and environmental data. Several clear conclusions concerning Atlantic yellowfin tuna and its fishery have emerged from the YYP studies:

1. An environmental anomaly, an "Atlantic El Niño" event, was probably the major cause of the very low CPUEs of adult yellowfin tuna. This anomaly was characterized by a warming of the surface waters and an unusually deep thermocline in the equatorial area particularly during the first quarter of 1984 (Figure 6). A deepening of the thermocline decreases the effectiveness of purse seining for tuna. Consequently, the CPUE declined markedly. Contrary to what this decline seemed to suggest, the adult yellowfin biomass probably was not at a very low level during this critical period, but rather was just less vulnerable to capture. Vessels could not make a profit with the low CPUEs so left this fishery for the Indian Ocean. Because of reduced fishing mortality due to the environmental anomaly and the decreased fishing effort, the adult yellowfin stock was actually increasing very quickly at this time.

2. Because of the poor yellowfin catches, the purse seine fleet that remained in the eastern Atlantic turned to skipjack tuna as an alternative species. Thus, fishing mortality on yellowfin tuna was further reduced. The commercial value of skipjack was low during this period, and did not compensate for the loss of yellowfin catches.

3. The recovery of the yellowfin stock since 1984 was rapid, confirming results of simulation models. This recovery was possible because of the natural, rapid growth rate of yellowfin tuna and the low level of fishing effort. This is clearly shown by the catch and effort relationship (Figure 7).

4. Although fishing effort was reduced, the fishing power of the purse seiners increased significantly due to several factors, including the development of bird radars and reduced duration of sets, allowing for more searching time. Other factors have probably also increased purse seiner fishing power, especially of the French and Spanish fleets (the 2 major fleets still in operation in the area), but have not yet been measured.

5. Several trans-Atlantic recoveries (from west to east) of tagged adult yellowfin confirmed a current hypothesis that yellowfin make transoceanic crossing. This is of major scientific interest, as it indicates a single stock of yellowfin in the Atlantic. Future stock assessments and management of Atlantic yellowfin tuna must take this new finding into consideration.

6. Other important biological findings: a) females were significantly more numerous than males among fish between 130 cm and 144 cm in length; at larger sizes, males predominate or are exclusively taken; b) a growth curve

hypothesis, developed in 1980, was confirmed; and c) summer spawning was found to occur around the Cape Verde Islands.

7. Stock assessment conclusion: The major difference between the 1980-83 eastern Atlantic yellowfin tuna fishery and the 1985-89 fishery was reduced fishing mortality on adults; the mortality on juveniles, however, remained the same (even with reduced fishing effort). Yield-per-recruit decreased, and the ICCAT 3.2 kg size limit had little or no effect, given the fishing pattern in existence.

Although the YYP was a small program in terms of funding, its results can be considered unique and extremely interesting. Very few tuna fisheries in the world have shown such a dramatic and durable change following an environmental anomaly, all while under strict international monitoring by scientists. A major lesson to be learned from this program is that an environmental anomaly can lead to wrong stock assessments based on fishery data alone and inappropriate management advice. It is now clear that the ICCAT could have been mislead and unnecessarily imposed drastic catch or effort limitations to protect the adult yellowfin stock, when, in fact, the stock was actually increasing, and under the protection of an anomalous environment.

## THE FISHERY FOR TROPICAL TUNAS IN THE EASTERN PACIFIC OCEAN DURING THE 1980's

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The 1980s were an eventful period in the history of the fishery for tropical tunas in the eastern Pacific Ocean (EPO). The catches of yellowfin were high, except during 1982 and 1983 when the most severe El Niño of the century decreased the vulnerability of the fish to capture and induced the owners of many of the fishing vessels to transfer their operations to the western Pacific. The total carrying capacity of the fleet decreased during the 1980s. The size of the U.S. fleet decreased considerably, while those of Mexico and Venezuela increased. During the latter half of the decade, the biomass of large yellowfin was relatively great and the fleet size was relatively small in the EPO, which resulted in catches per unit of effort (CPUEs) which were well above average.

The total fleet capacity decreased by 28%, from 171 to 123 thousand metric tons (mt), during the 1980s (Figure 8). The U.S. fleet decreased by 68%, while those of Mexico and Venezuela increased by 47% and 316%, respectively. Many of the U.S. vessels transferred their operations to the western Pacific during the El Niño of 1982- 83, and remained there after the El Niño had ended. In 1981, there were 11 U.S. vessels, with a total capacity of 14 thousand mt, in the western Pacific. These numbers increased to 17 vessels and 20 thousand mt, 29 vessels and 34 thousand mt, and 49 vessels and 55 thousand mt in 1982, 1983, and 1984, respectively. In 1989 there were 33 U.S. vessels with a total capacity of 39 thousand mt in the western Pacific.

The catches of yellowfin increased considerably during the late 1980s, and exceeded 270 thousand mt in each year of the 1987-89 period (Table 7). The skipjack catches exceeded or were close to 100 thousand mt in each year of the 1980-82 period, decreased to considerably less than that during 1983-87, and then increased during 1988-89. The reduced catches of both species during 1982-84 were probably due to lesser vulnerability to capture during the 1982-83 El

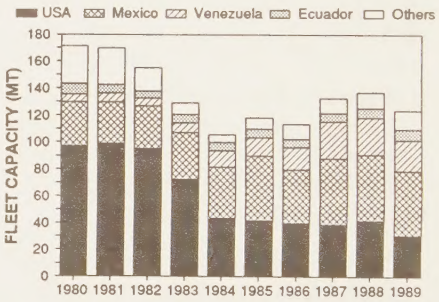


**Figure 8.** Capacity (thousands of metric tons) of the eastern Pacific Ocean tropical tuna fleet, by country, 1980-89. Only vessels which caught tropical tunas are included.

**Table 7.** Catches (thousands of metric tons) of yellowfin and skipjack tuna in the eastern Pacific Ocean. Due to rounding, the sums of the catches for the individual countries do not always equal the values in the "Total" lines.

| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 |
|---|---|---|---|---|---|---|---|---|---|---|
| | YELLOWFIN | | | | | | | | | |
| Ecuador | 6 | 8 | 5 | 8 | 11 | 9 | 17 | 15 | 25 | 17 |
| Mexico | 19 | 40 | 19 | 19 | 54 | 81 | 105 | 99 | 105 | 120 |
| U.S.A. | 104 | 103 | 81 | 53 | 64 | 87 | 92 | 100 | 88 | 79 |
| Venezuela | * | * | * | 8 | 10 | 22 | 30 | 35 | 40 | 46 |
| Others | * | * | * | 7 | 5 | 21 | 25 | 23 | 30 | 25 |
| Total | 160 | 182 | 126 | 95 | 145 | 220 | 269 | 273 | 289 | 288 |
| | SKIPJACK | | | | | | | | | |
| Ecuador | 7 | 9 | 14 | 13 | 19 | 23 | 24 | 20 | 12 | 23 |
| Mexico | 12 | 26 | 16 | 7 | 10 | 6 | 8 | 6 | 19 | 17 |
| U.S.A. | 90 | 69 | 55 | 32 | 23 | 9 | 12 | 13 | 34 | 19 |
| Venezuela | * | * | * | 3 | 7 | 7 | 10 | 10 | 11 | 14 |
| Others | * | * | * | 3 | 2 | 5 | 10 | 13 | 10 | 17 |
| Total | 131 | 120 | 99 | 58 | 61 | 50 | 64 | 63 | 85 | 91 |

*not included because doing so would reveal details of the operations of an individual company

Niño episode and to reduced fishing effort during 1983- 84 (Table 8), due to the exodus of vessels to the western Pacific. The CPUEs, in metric tons of yellowfin per day's fishing by purse seiners with capacities of more than 400 short tons (363 mt), were less than 6 mt of yellowfin during 1981-83, 9.1 mt in 1984, and more than 12 mt during 1985-89 (Table 8).

The increased catches of yellowfin during the late 1980s are attributable mainly to three factors: increased recruitment; reduced fishing effort during 1983-84; and concentration of effort toward larger fish (Table 8).

The increased recruitment relative to the 1960s and early 1970s is due partly to expansion of the area in which fishing is conducted and partly to natural factors; however, the increased recruitment relative to the late 1970s and early 1980s is due only to natural factors, as there was no expansion then. One of these factors may be El Niño conditions, as the El Niño episodes of 1969, 1972, 1976, 1982-83, and 1986-87 were followed by better-than-average recruitment in 1970, 1973, 1977, 1983-84, and 1987-88. El Niño events may, by mechanisms still unknown, permit greater survival of larval and juvenile fish.

During the late 1970s and early 1980s, fishing was directed largely toward smaller fish, which produce lesser yields per recruit, i.e., the fish are caught too young to take best advantage of their growth (Table 8). During 1983-84, when the fishing effort in the EPO was reduced, many of the smaller fish that avoided capture grew much larger. By 1985 there was an accumulation of larger fish, and concentration of effort on them produced greater CPUEs and increased catches in that and subsequent years.

The IATTC staff believed in 1985 that the yield of yellowfin would be greater during the remainder of the decade if fishing would continue to be directed mainly toward larger fish. Fortunately, this was what happened. During the 1975-82 period the capacity of the fleet ranged from 155 to 171 thousand mt, whereas during 1985- 89 it ranged from 113 to 137 thousand mt. If the effort during the 1985-89 period had been at the same level as during the 1975-82 period, larger fish might have become so scarce that more effort would have been directed toward smaller fish, which would have reduced the catches in 1988 and 1989.

If the fleet can continue to direct its effort mainly toward larger fish, the catches of yellowfin in the EPO should continue to be good. The catches will probably not continue at the 1986-89 level, however, because the recruitment will probably not continue to be as large as during the 1983-89 period, unless the area of fishing is further expanded. Also, three large U.S. canneries recently announced that they will no longer buy fish caught in association with dolphins, so the fishing effort in the future may be directed more toward smaller fish that are less often associated with dolphins.

There is almost no spawning of skipjack in the EPO. The fish which are caught there are almost entirely migrants from the central Pacific (and possibly the western Pacific). These fish remain a few months in the EPO and then return to the areas from which they came. The abundance of skipjack in the EPO is determined by the success of spawning in the central Pacific (and possibly the western Pacific), the proportion of juvenile skipjack which migrate to the EPO, and the length of time that they stay there. The catches in the EPO are influenced by market demand as well as skipjack abundance. The market demand for skipjack was particularly low during the mid-1980s, which was at least partly responsible for the reduced catches during that period.

**Table 8.** Estimated fishing effort (thousands of purse-seine days), CPUE (metric tons of yellowfin tuna per day), recruitment of yellowfin (millions of 30-cm fish), average weights of yellowfin (kilograms), and approximate yields per recruit (kilograms) corresponding to those average weights, all for the eastern Pacific Ocean.

| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 |
|---|---|---|---|---|---|---|---|---|---|---|
| Effort | 34.8 | 33.8 | 28.1 | 20.1 | 17.1 | 18.5 | 18.0 | 22.4 | 24.6 | 22.7 |
| CPUE | 4.9 | 5.6 | 4.8 | 5.2 | 9.1 | 12.3 | 15.9 | 12.8 | 12.2 | 13.1 |
| Recruit. | 67 | 57 | 73 | 84 | 83 | 83 | 94 | 107 | 98 | 94 |
| Ave. wgt. | 6.1 | 6.7 | 5.3 | 7.5 | 9.5 | 15.6 | 13.2 | 11.0 | 8.0 | 12.0 |
| Y/R | 2.4 | 2.4 | 2.2 | 2.6 | 2.9 | 3.4 | 3.3 | 3.1 | 2.7 | 3.2 |

# RECENT DEVELOPMENTS IN TUNA FISHERIES

*Editor's note: The following news articles were compiled from NMFS reports, newspapers and fishery trade and industry journals. (P. Kleiber)*

## UNITED STATES

**Albacore Ex-Vessel Prices Set-**-The Western Fishboat Owners Association completed ex-vessel price negotiations for this year's north Pacific albacore fishery in early July. The price for large fish (9 pounds and up) is higher than last year's price and close to the record level of the 1988 fishery. For fishermen delivering to the Pan Pacific cannery at Terminal Island, California, the ex-vessel price is $1,700/st for large fish and $1,100/st for 7 to 9 pound fish. The ex-vessel price for albacore delivered to "traditional coastal buying stations" is $100/st less. This year, canners are being vigilant on quality, specifying that fish must be held at 14°F. (Pacific Fishing, August 1990)

**"Dolphin-Safe" Tuna Programs**--Both Bumble Bee Seafoods and Chicken of the Sea have had their dolphin-safe programs approved by the Earth Island Institute, the environmental group spearheading the dolphin-safe movement. Meanwhile, in the eastern tropical Pacific, catches through mid-July were up by 12,910 st to 247,765 st, according to the Inter-American Tropical Tuna Commission. The catch of yellowfin tuna, mostly caught on dolphins, has jumped from last year's 157,654 st to this year's 178,654 st. This tuna is all destined for markets other than the U.S. because the major canners are not taking yellowfin caught on dolphins. This increased catch in the eastern Pacific has combined with good fishing in the western Pacific to produce a surplus of fish to the world market, thus forcing ex-vessel prices down. Ex-vessel prices are down 20% from earlier in the year. Most of the U.S. fleet that fished the eastern Pacific is still getting ready to move to the western Pacific. When those boats hit the new grounds, their catching power can only hurt the ex-vessel price if the supply further overwhelms demand. Canning capacity has been somewhat reduced. Van Camp and Neptune have closed their Puerto Rico canneries, though the Neptune closure is supposedly temporary. (Pacific Fishing, August 1990)

**NOAA Releases Report on Driftnet Kills**--According to a National Oceanic and Atmospheric Administration (NOAA) report released in early July, "open-sea driftnet fishing is killing substantial numbers of tuna, sharks, marine mammals and seabirds in incidental catches in the north Pacific." William Fox, NOAA Assistant Administrator for Fisheries, urged action by the United Nations to halt this controversial fishing method. The NOAA report summarized catch and bycatch rates observed by 9 American, 5 Canadian and 32 Japanese observers aboard high-seas driftnet vessels from June to December, 1989, in a U.S.-backed pilot program. It was the first multinational observer program in the history of the fishery.

During the six-month collection period, the observed vessels killed 59,060 albacore tuna, 58,000 blue sharks, 9,173 seabirds and 914 dolphins incidental to squid fishing operations. The observed vessels constitute only 4% of the total Japanese commercial squid driftnet fleet. No boats were monitored from South Korea or Taiwan, which also participate in the driftnet fishery. The observer coverage of the fleets has been expanded for 1990 to produce three times as much data and include Korean and Taiwanese fishing vessels. (National Fisherman, September 1990)

## SOUTH PACIFIC OCEAN

**Forum Fisheries Agency-U.S. Treaty**--In the first two months of the third licensing period, 32 out of 49 licensed U.S. tuna purse seiners were actively fishing in the region. Most of the fishing trips were shorter than those made in 1989. The majority of the seiners completed their trips in early June and were in Pago Pago waiting to unload. Transshipment of catches to carriers increased at Pago Pago and Tinian as vessels attempted to make faster turnarounds to fishing grounds. Fishing activities for the month of June and July centered around the equator, with vessel movements from longitudes 150 degrees east to 175 degrees west. (Forum Fisheries Agency News Digest, July/August 1990)

**First Cannery for Papua New Guinea**--Papua New Guinea is to get its first fish cannery. It will be built at the northern coastal town of Madang at a cost of $61.5 million as a joint venture between a local company, James Barnes Pty Ltd, and Sealog International of West Germany. The cannery, when completed, should halve the country's import bill for canned fish from the present $78 million and provide jobs for about 400 people. A tuna fishing venture involving about 20 longliners fishing in the country's EEZ is also being considered. (World Fishing, July 1990)

**Australian Bluefin Tuna Observers**--Sixteen Australian observer crews went on board Japanese southern bluefin tuna longline vessels off eastern Tasmania between April and June in a major operation to monitor the workings of these boats. Observers monitored the catch and validated the logbook data of the Japanese boats. At a peak period, there were 103 Japanese longline boats in the area. A quota of 1,800 mt liveweight of bluefin tuna was set for the Japanese fishing in the Australian fishing zone. The Japanese catch was monitored through radio reports and the observer crews. The area was closed to the Japanese boats on June 9 when the quota was reached. (Australian Fisheries, July 1990)

**Papua New Guinea-Soviet Union Fishing Agreement**--Papua New Guinea and the Soviet Union have signed a new fishing agreement under which the Soviets will provide assistance in the areas of harvesting and marketing of fish, research, training and technical assistance. Also, two Soviet purse seiners will be sent to Papua New Guinea to fish for tuna. The two countries were to have signed this agreement last August, but Papua New Guinea asked to reconsider at the last moment. The new treaty is for a three-year period. (World Fishing, July 1990)

**Tuvalu-South Korean Fishing Agreement**--Officials from Tuvalu and South Korea met in Pago Pago July 30 to August 2, 1990, to discuss the terms and conditions for access by Korean tuna longliners to the Tuvalu EEZ during the 1990-91 season. Although an agreement was reached, Tuvalu made it clear

that it would require an improvement in the reporting procedures used by the Korean vessels. Korean longliners have been permitted access to the Tuvalu EEZ for several years, and the renewed agreement permits up to 100 longline vessels to operate there. (Forum Fisheries Agency News Digest, July/August 1990)

**Two New Tuna Purse Seiners for Solomon Islands--** Two Australian-built tuna purse seiners measuring 57 m and weighing 500 GRT were delivered to the Solomon Islands recently. The vessels, which together cost about $24.8 million, are equipped with the latest fishing technology including "bird radar" capable of locating seabirds to pinpoint tuna schools. Each vessel has a carrying capacity of 520 to 530 mt of frozen fish and a freezing capacity of about 80 mt per 24 hours. The two purse seiners will join the Solomon Island fleet of 32 pole-and-line vessels for catching tuna in the nation's 1.3 million square km EEZ. One of the vessels made a 40 mt catch in its first set just before reaching Honiara. (INFOFISH Trade News, July 16, 1990)

## INDIAN OCEAN

**Landings from Indian Ocean Were Poor in 2nd Quarter 1990--** As of June 30, 1990, the purse seine catches in the western Indian Ocean totalled 65,781 mt (as registered in the seiners' logbooks). The number of purse seiners decreased in the area from 54 during January-March, 1990, to 44 in June. Landings were poor throughout the second quarter of the year, with a slight improvement in June. The catch rate was 10.3 mt per day, an all time low, compared to 13.5 mt in 1989 for the same period. For longliners, monthly licenses are being issued by the Seychelles Fishing Authority. The number of boats has increased from 7 in April to 33 in June. However, the cumulative transshipment for longliners (21 South Koreans and 3 Japanese) has dropped by about 90% against the same period last year and totaled 3,719 mt, including yellowfin, bigeye, marlin and shark. (INFOFISH Trade News, October 2, 1990)

**Indian Ocean Nations Consider Forming Tuna Organization--** Representatives from nine Indian Ocean nations recently met in Victoria, Australia, to consider the creation of a regional tuna organization. Seychellois Minister for Agriculture and Fisheries Jeremie Bonnelame stated that it was important that coastal states in this region take positive steps to ensure that they secure a fair share of the benefits flowing from the exploitation of their tuna resources. Currently there are more than 50 purse seiners operating in the region with total annual catches in excess of 200,000 mt. Representatives from Comoros, India, Kenya, Madagascar, the Maldives, Mauritius, Mozambique, Tanzania and the Seychelles are studying a draft convention to govern operations of a future regional tuna organization. The proposed body will increase co-operation among member states in the exploitation of the resource, surveillance of their EEZs, prevention of overfishing, research, processing and marketing. (World Fishing, August 1990)

## ATLANTIC OCEAN

**Japan-EC Fishing Agreement--** A short-term agreement with Japan over the need to limit Japanese fishing in Portuguese waters has been achieved by the European Community. The agreement, which ran to the end of June, reduced the maximum number of Japanese longliners to ten at a maximum tonnage per vessel of 500 GRT, and will limit the catch to 80 tons of bluefin tuna, which may include catches of up to 25% of other tuna species. The taking of bluefin of less than 6.4 kg will be prohibited, as will the taking of yellowfin and bigeye tuna of less than 3.2 kg. In return, Japan will make a financial contribution to a scientific and technical cooperation program in aid of the Portuguese coastal population. (Fishing News International, June 1990)

**Guinea-Bissau-EC Fishing Agreement--**A renewed fishing agreement between Guinea-Bissau and the European Community sets out the conditions for continued access to Guinea-Bissau waters for EC fishermen. The arrangements, worth up to $15.9 million to Guinea Bissau, extend to June 1991. Access is provided for 45 EC tuna purse seiners, 35 longliners and 15 pole-and-line vessels. (Fishing News International, June 1990)

## 1990-91 TUNA MEETINGS

(Organizer; meeting type: sci=science, adm=administration)

- NOV 5-9. International Commission for the Conservation of Atlantic Tunas (ICCAT), Standing Committee on Research and Statistics meeting. Madrid, Spain. (ICCAT; sci)
- NOV 12-15. ICCAT, Commission meeting. Madrid, Spain. (ICCAT; adm)
- NOV 27-30. Fourth Southeast Asian Tuna Conference. Bangkok, Thailand. (Indo-Pacific Tuna Programme; sci)
- DEC 1991. Expert Consultation on Interactions of Pacific Ocean Tuna Fisheries. Noumea, New Caledonia. (FAO; sci)
- JUN 18-20 1991. Inter-American Tropical Tuna Commission (IATTC), Annual Meeting. Tokyo, Japan. (IATTC; adm)

## CARIBBEAN

**Trinidad Bans Driftnets**--The state-owned National Fisheries Company (NFC) announced at a press conference on September 5, 1990, that it will not permit vessels equipped with driftnets to use its facilities. NFC facilities in Trinidad are well-suited for the vessels in question, and the company's decision will make it difficult for driftnetters to transship their catches in Trinidad. NFC Chairman said that he would also ensure that driftnetters do not use either Port of Spain or other Trinidadian ports. The NFC announcement followed reports in the U.S. and Trinidadian press that driftnetters were using NFC berthing facilities in Port of Spain. A local Taiwanese-owned company continues to claim that its vessels do not use driftnets and that the vessels photographed by sports fishing interests in May belong to another Taiwanese company. (NMFS, Office of International Affairs)

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